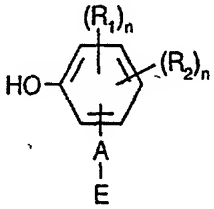
What is claimed is

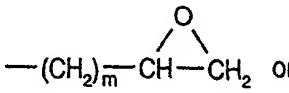
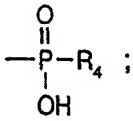
1. A process for stabilising and at the same time phase compatibilising plastics or plastic compositions by incorporating polymeric compounds obtainable by reacting a compound selected from the group consisting of the sterically hindered phenols, sterically hindered amines, lactones, sulfides, phosphites, benzotriazoles, benzophenones and 2-(2-hydroxy-phenyl)-1,3,5-triazines, which compounds contain at least one reactive group, with a compatibilisator.

2. A process according to claim 1, wherein the sterically hindered phenols are

compounds of formula I  **(I)**, wherein

R_1 and R_2 are each independently of the other hydrogen, C_1-C_{25}alkyl, phenyl-C_1-C_3alkyl which is unsubstituted or substituted once or several times at the aromatic ring by OH or/and C_1-C_4alkyl, unsubstituted or C_1-C_4alkyl-substituted C_5-C_{12}cycloalkyl, or phenyl;

n is 1, 2 or 3;

E is OH, SH, NHR_3, SO_3H, COOH, $-CH=CH_2$,  or  ;

m is 0 or 1;

R_3 is hydrogen or C_1-C_9alkyl;

R_4 is C_1-C_{12}alkyl, or phenyl which is unsubstituted or substituted by one or several C_1-C_4-alkyl, halogen or/and C_1-C_{18}alkoxy;

A if E is OH, SH or $-CH=CH_2$, is $-C_xH_{2x}-$, $-CH_2-S-CH_2CH_2-$, $-C_qH_{2q}-(CO)-O-C_pH_{2p}-$, $-C_qH_{2q}-(CO)-NH-C_pH_{2p}-$ or $-C_qH_{2q}-(CO)-O-C_pH_{2p}-S-C_qH_{2q}-$;

x is a number from 0 to 8;

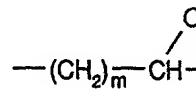
p is a number from 2 to 8;

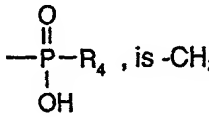
q is a number from 0 to 3;

R_1 and **n** are as defined above; or

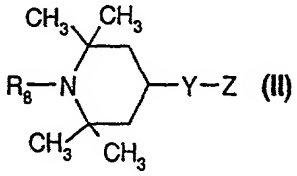
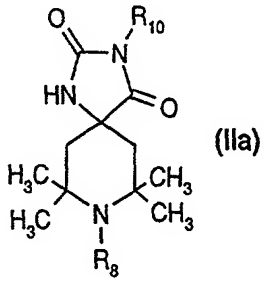
A if E is $-NHR_3$, is $-C_xH_{2x}-$ or $-C_qH_{2q}-(CO)-NH-C_pH_{2p}-$, wherein x, p and q have the meanings cited above; or

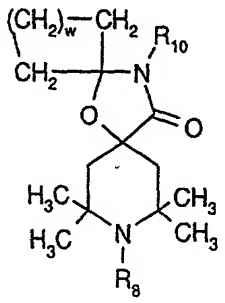
A if E is COOH or SO_3H, is $-C_xH_{2x}-$, $-CH_2-S-CH_2-$ or $-CH_2-S-CH_2CH_2-$, wherein x has the meaning cited above; or

A if E is  , is a direct bond, $-C_qH_{2q}-(CO)_m-O-CH_2-$ or $-C_xH_{2x}-S-CH_2-$, wherein q, m, x, R_1 and R_2 are as defined above;

A if E is  , is $-CH_2-$.

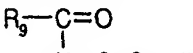
3. A process acording to claim 1, wherein the sterically hindered amines are compounds

of formula II, IIa or IIb  **(II)**  **(IIa)**

 **(IIb)**, wherein

R_8 is hydrogen, C_1-C_{25}alkyl, C_2-C_{20}alkenyl, C_2-C_{20}alkynyl, C_1-C_{20}alkoxy, phenyl-C_1-C_3alkyl, C_5-C_{12}cycloalkyl, C_5-C_8cycloalkoxy, phenyl, naphthyl, hydroxyethyl, CO-C_1-C_{25}alkyl, CO-phenyl, CO-naphthyl, CO-phenyl-C_1-C_3alkyl, O-CO-C_1-C_{20}alkyl or C_1-C_6alkyl-S-C_1-C_6alkyl, C_1-C_6alkyl-O-C_1-C_6alkyl, C_1-C_6alkyl-(CO)-C_1-C_6alkyl, $-CH_2CH_2-O-CH_2-CH(O)CH_2$ or $-CH_2-CH(O)CH_2$;

w is a number from 1 to 10;

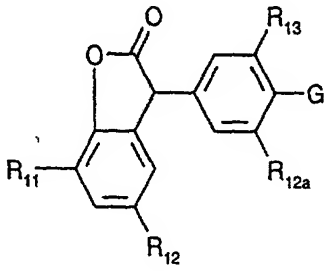
Y is a single bond, C_1-C_{25}alkylene, phenylene, biphenylene, naphthylene, -O-C_1-C_{25}alkylene, -NR_9-, -O- or  ;

Z is hydrogen, -$COOR_9$, -NH_2, -OR_9, hydroxyethyl, or  ;

R_9 is hydrogen or C_1-C_{12}alkyl;

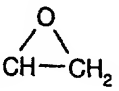
R_{10} has the same definition as R_8.

4. A process according to claim 1, wherein the lactones are compounds of formula III

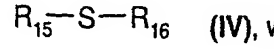


(III), wherein

R_{11}, R_{12}, R_{12a} and R_{13} are each independently of one another hydrogen, C_1-C_{25}alkyl, phenyl-C_1-C_3alkyl, C_5-C_{12}cycloalkyl or phenyl; and

G is OH, OCH_2CH_2OH,  or -OCH_2COOH.

5. A process according to claim 1, wherein the sulfides are compounds of formula IV

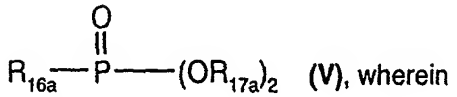
 **(IV)**, wherein

R_{15} is C_1-C_{18}alkyl, benzyl, phenyl or  ; and

R_{16} is -CH_2CH_2OH,  , -CH_2COOH or -CH_2CH_2COOH; and

R_{17} is C_1-C_{18}alkyl or unsubstituted or C_1-C_4alkyl-substituted phenyl.

6. A process according to claim 1, wherein the phosphites are compounds of formula V

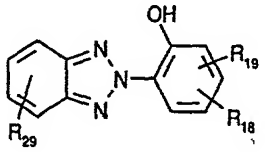


(V), wherein

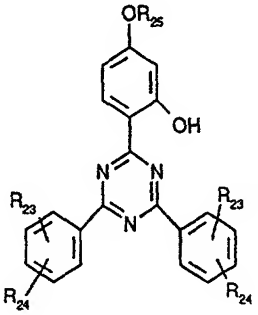
R_{16a} is $-CH_2CH_2OH$ or $-CH_2CH_2COOH$; and

R_{17a} is C_1-C_{18}alkyl or unsubstituted or C_1-C_4alkyl-substituted phenyl.

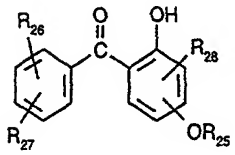
7. A process according to claim 1, wherein the benzotriazoles, benzophenones and 2,4,6-triaryl-1,3,5-triazines are compounds of formula VI, VIa, VIb or VIc



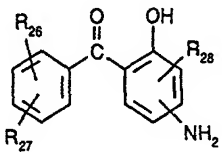
(VI),



(VIa),



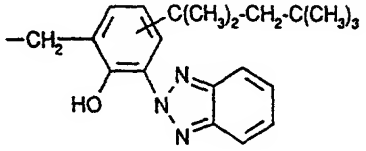
(VIb),



(VIc), wherein

R_{18} is $-(CH_2)_t$-R_{20}, $-O-CH_2-CH(O)CH_2$ or NH_2;

R_{19} is C_1-C_{12}alkyl, α,α-dimethylbenzyl or a radical



;

R_{20} is -OH, -SH, $-NHR_{30}$, $-SO_3H$, $-COOR_{21}$, $-CH=CH_2$, $-(CH_2)_m-CH(O)CH_2$ or $-(CO)-NH-(CH_2)_u-NCO$;

R_{21} is hydrogen, $-CH_2-CH(O)CH_2$ or $-CH_2-CH(OH)-CH_2-O-(CO)-R_{22}$;

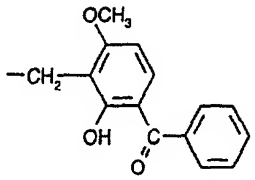
R_{22} is C_1-C_4alkyl or phenyl;

R_{23} and R_{24} are each independently of the other hydrogen or C_1-C_4alkyl;

R_{25} is hydrogen, $-(CH_2)_u-OH$, $-CH_2-CH(O)CH_2$, $-(CH_2)_uCOOH$ or $-(CO)-NH-(CH_2)_u-NCO$;

R_{26} is hydrogen, OH or C_1-C_{12}alkoxy;

R_{27} is hydrogen or OH;

R_{28} is hydrogen or  ;

R_{29} is hydrogen or halogen;

R_{30} is hydrogen or C_1-C_9alkyl;

m is 0 or 1;

t is a number from 0 to 6;

u is a number from 2 to 12.

8. A process according to claim 1, wherein the compatibiliser compound is a polymer containing acid groups, acid anhydride groups, ester groups, epoxy groups or alcohol groups or wherein the compatibiliser compound is a copolymer or terpolymer of polyethylene, polypropylene, vinyl acetate or styrene with acrylic acid.

9. A process according to claim 8, wherein the compatibiliser compound is a polymer with acrylic acid (AA) function, glycidyl methacrylate (GMA) function, methacrylic acid (MAA) function, maleic anhydride (MAH) function or vinyl alcohol (VA) function.

10. A process according to claim 8, wherein the compatibiliser compound is a copolymer consisting of polyethylene acrylic acid (PE-AA),
polyethylene glycidyl methacrylate (PE-GMA),
polyethylene methacrylic acid (PE-MAA) or
polyethylene maleic anhydride (PE-MAH) or
a terpolymer of polyethylene and vinyl acetate with acrylic acid or
a terpolymer of polyethylene and acrylates with acrylic acid.

11. A process according to claim 8, wherein the compatibiliser compound is a grafted polyethylene or polypropylene copolymer selected from the group consisting of maleic anhydride grafted to polyethylene vinyl acetate (MAH-g-PE-vinyl acetate), maleic anhydride grafted to low density polyethylene (MAH-g-LDPE), maleic anhydride grafted to high density

polyethylene (MAH-g-HDPE), maleic anhydride grafted to linear low density polyethylene (MAH-g-LLDPE), acrylic acid grafted to polypropylene (AA-g-PP), glycidyl methacrylate grafted to polypropylene (GMA-g-PP), maleic anhydride grafted to polypropylene (MAH-g-PP), maleic anhydride grafted to ethylene/propylene terpolymer (MAH-g-EPDM), maleic anhydride grafted to ethylene/propylene rubber (MAH-g-EPM) and maleic anhydride grafted to polyethylene/polypropylene copolymer (MAH-g-PE/PP).

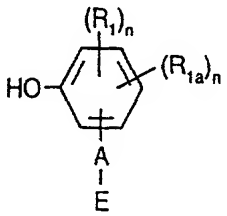
12. A process according to claim 8, wherein the compatibiliser compound is a grafted styrene co- or terpolymer selected from the group consisting of styrene/acrylonitrile grafted with maleic anhydride (SAN-g-MAH), styrene/maleic anhydride/methyl methacrylate, styrene/butadiene/styrene block copolymer grafted with maleic anhydride (SBS-g-MAH), styrene/ethylene/propylene/styrene block copolymer grafted with maleic anhydride (SEPS-g-MAH), styrene/ethylene/butadiene/styrene block copolymer grafted with maleic anhydride (SEPS-g-MAH) and acrylic acid/polyethylene/polystyrene terpolymer (AA-PE-PS-terpolymer).

13. A process according to claim 8, wherein the compatibiliser compound is a vinyl alcohol copolymer.

14. A process according to claim 1, wherein the polymers to be stabilised are at least two different polymers.

15. A process according to claim 1, wherein the polymers to be stabilised are recycled material.

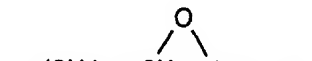
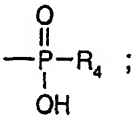
16. A compound obtainable by reacting sterically hindered phenols of formula I



(I), wherein

R_1 and R_2 are each independently of the other hydrogen, C_1-C_{25}alkyl, phenyl-C_1-C_3alkyl which is unsubstituted or substituted once or several times at the aromatic ring by OH or/and C_1-C_4alkyl, unsubstituted or C_1-C_4alkyl-substituted C_5-C_{12}cycloalkyl, or phenyl;

n is 1, 2 or 3;

E is OH, SH, NHR_3, SO_3H, COOH, $-CH=CH_2$,  or  ;

m is 0 or 1;

R_3 is hydrogen or C_1-C_9alkyl;

R_4 is C_1-C_{12}alkyl, phenyl which is unsubstituted or substituted by one or several C_1-C_4-alkyl, halogen or/and C_1-C_{18}alkoxy;

A if E is OH, SH or $-CH=CH_2$, is $-C_xH_{2x}-$, $-CH_2-S-CH_2CH_2-$, $-C_qH_{2q}-(CO)-O-C_pH_{2p}-$, $-C_qH_{2q}-(CO)-NH-C_pH_{2p}-$ or $-C_qH_{2q}-(CO)-O-C_pH_{2p}-S-C_qH_{2q}-$;

x is a number from 0 to 8;

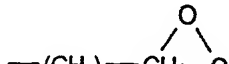
p is a number from 2 to 8;

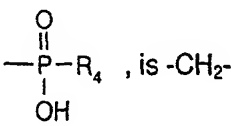
q is a number from 0 to 3;

R_1 and n are as defined above; or

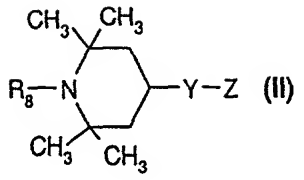
A if E is $-NHR_3$, is $-C_xH_{2x}-$ or $-C_qH_{2q}-(CO)-NH-C_pH_{2p}-$, wherein x, p and q have the meanings cited above; or

A if E is COOH or SO_3H, is $-C_xH_{2x}-$, $-CH_2-S-CH_2-$ or $-CH_2-S-CH_2CH_2-$, wherein x has the meaning cited above; or

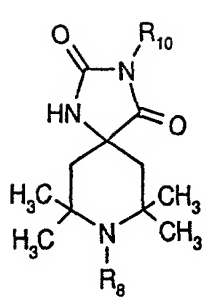
A if E is  , is a direct bond, $-C_qH_{2q}-(CO)-O-CH_2-$ or $-C_xH_{2x}-S-CH_2-$, wherein q, m, x, R_1 and R_2 are as defined above;

A if E is  , is $-CH_2-$;

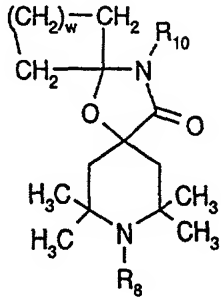
or sterically hindered amines of formula II, IIa or IIb



(II)



(IIa)



(IIb), wherein

R_8 is hydrogen, C_1-C_{25}alkyl, C_2-C_{20}alkenyl, C_2-C_{20}alkynyl, C_1-C_{20}alkoxy, phenyl-C_1-C_3alkyl, C_5-C_{12}cycloalkyl, C_5-C_8cycloalkoxy, phenyl, naphthyl, hydroxyethyl, CO-C_1-C_{25}alkyl, CO-phenyl, CO-naphthyl, CO-phenyl-C_1-C_3alkyl, O-CO-C_1-C_{20}alkyl or C_1-C_6alkyl-S-C_1-C_6alkyl, C_1-C_6alkyl-O-C_1-C_6alkyl, C_1-C_6alkyl-(CO)-C_1-C_6alkyl, $-CH_2CH_2-O-CH_2-CH(O)CH_2$ or $-CH_2-CH(O)CH_2$;

w is a number from 1 to 10;

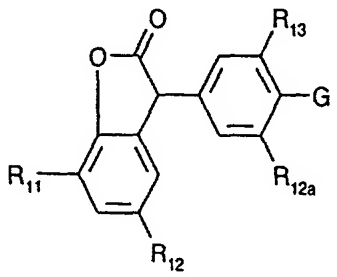
Y is a single bond, C_1-C_{25}alkylene, phenylene, biphenylene, naphthylene, -O-C_1-C_{25}alkylene, $-NR_9-$, -O- or $-N(-C(=O)R_9)-C_1$-C_{25}alkylene;

Z is hydrogen, $-COOR_9$, $-NH_2$, $-OR_9$, hydroxyethyl, $-CH_2-CH(O)CH_2$ or $-C(=O)-C(R_9)=CH_2$;

R_9 is hydrogen or C_1-C_{12}alkyl;

R_{10} has the same definition as R_8;

or lactones of formula III



(III), wherein

R_{11}, R_{12}, R_{12a} and R_{13} are each independently of one another hydrogen, C_1-C_{25}alkyl,

phenyl-C_1-C_3alkyl, C_5-C_{12}cycloalkyl or phenyl; and

G is OH, OCH_2CH_2OH, $-CH_2-\underset{\diagdown O \diagup}{CH}-CH_2$ or $-OCH_2COOH$;

or sulfides of formula IV

$$R_{15}-S-R_{16} \quad \textbf{(IV)}, \text{ wherein}$$

R_{15} is C_1-C_{18}alkyl, benzyl, phenyl or $-\overset{S}{\overset{\|}{P}}-(OR_{17})_2$; and

R_{16} is $-CH_2CH_2OH$, $-CH_2-\underset{\diagdown O \diagup}{CH}-CH_2$, $-CH_2COOH$ or $-CH_2CH_2COOH$; and

R_{17} is C_1-C_{18}alkyl or unsubstituted or C_1-C_4alkyl-substituted phenyl;

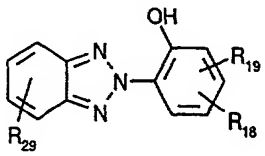
or phosphites of formula V

$$R_{16a}-\overset{O}{\overset{\|}{P}}-(OR_{17a})_2 \quad \textbf{(V)}, \text{ wherein}$$

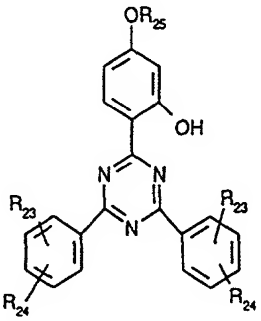
R_{16a} is $-CH_2CH_2OH$ or $-CH_2CH_2COOH$; and

R_{17a} is C_1-C_{18}alkyl or unsubstituted or C_1-C_4alkyl-substituted phenyl;

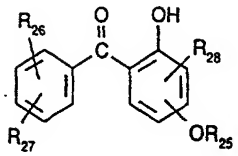
or benzotriazoles, benzophenones or 2,4,6-triaryl-1,3,5-triazines of formula VI, VIa, VIb or VIc



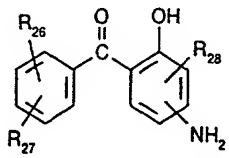
(VI),



(VIa),

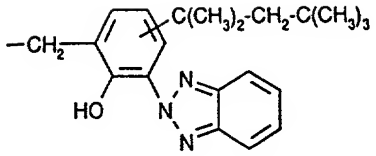


(VIb),



(VIc), wherein

R_{18} is $-(CH_2)_t-R_{20}$, $-O-CH_2-\underset{\diagdown O \diagup}{CH}-CH_2$ or NH_2;

R_{19} is C_1-C_{12}alkyl, α,α-dimethylbenzyl or a radical  ;

R_{20} is -OH, -SH, $-NHR_{30}$, $-SO_3H$, $-COOR_{21}$, $-CH=CH_2$, $-(CH_2)_m-CH(O)CH_2$ or

$-(CO)-NH-(CH_2)_u-NCO$;

R_{21} is hydrogen, $-CH_2-CH(O)CH_2$ or $-CH_2-CH(OH)-CH_2-O-(CO)-R_{22}$;

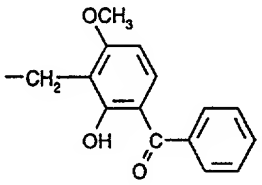
R_{22} is C_1-C_4alkyl or phenyl;

R_{23} and R_{24} are each independently of the other hydrogen or C_1-C_4alkyl;

R_{25} is hydrogen, $-(CH_2)_u-OH$, $-CH_2-CH(O)CH_2$, $-(CH_2)_uCOOH$ or $-(CO)-NH-(CH_2)_u-NCO$;

R_{26} is hydrogen, OH or C_1-C_{12}alkoxy;

R_{27} is hydrogen or OH;

R_{28} is hydrogen or  ;

R_{29} is hydrogen or halogen;

R_{30} is hydrogen or C_1-C_9alkyl;

m is 0 or 1;

t is a number from 0 to 6;

u is a number from 2 to 12;

with a compatibiliser compound.

17. Use of compounds according to claim 16 as stabilisers and at the same time as phase compatibilisers in plastics or plastic compositions.